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### Appendix I. Crossbills *Loxia curvirostra* in the Mediterranean area.

In the Balkan peninsula the Crossbill (*L.c. mariae*) lives in pine woods (*Pinus silvestris* and *P. nigra*) (Matveiev 1976; G. Handrinos). In Cyprus also *L.c. guillemardi* lives in woods of *P. nigra* above c. 1500 m (Flint & Stewart 1983). In Crete breeding was confirmed recently at the Naturel Reserve of Samaria, in *P. nigra* and *Cupressus sempervirens* (Massa 1984). In Sicily breeding was confirmed by Priolo & Sarà (1981), in woods of *P. laricio* on Mt Etna, where it appears to be sedentary (pers. obs.). In the Italian peninsula the Crossbill lives in woods of *P. nigra* in Sila and Aspromonte (Calabria) (Di Carlo 1961, 1962; Moltoni 1964; M. Lo Valvo, Mingozzi, Pazzuconi, Sarà, pers. comm.), in Abruzzi (Di Carlo 1972) and Umbria (Castiglia & Tabarrini 1980). In the Alps, according to P. Bricchetti it prefers *Picea excelsa*, often associated with woods of *Abies alba*, *Pinus sylvestris*, *P. cembra* and *P. uncinata*. Flocks of Crossbills annually cross the sub-alpine areas during late August and early September, but the source and direction of those movements are unknown (V. Vigorita). In Italy, the Crossbill lives at 1000–2100 m, but instances of breeding at sea level, though unusual, are known (nearly independent newly-fledged chicks at Porto Ercole, Grosseto, 15 August 1930 – label on 2 specimens of Museo La Specola of Florence written by N. Beccari: N. Baccetti); a pair with just fledged chicks among the pines near Laghi Alimini, Lecce, 1 October 1983: F. Petretti).

The Corsican population of Crossbills (*L.c. corsicana*) lives in woods of *P. laricio*, whereas the north African populations (*L.c. poliogyna*) live in *P. halepensis* in inland areas of Tunisia, Algeria and Morocco (Heim de Balsac & Mayaud 1962), where it seems to be sedentary (M. Thévenot). The Mallorca population (*L.c. balearica*) also lives in *P. halepensis* from sea level (J. Muntaner).

All these forms are accepted by Vaurie (1959: 649–651), who regards *hispana* of Spain as a synonym of nominate *curvirostra*. According to Carlos Senar & Borràs (1984) the Crossbill in Catalonia and Andorra lives on *P. nigra*, *P. halepensis*, *P. sylvestris*, *P. uncinata* and on *Abies alba*.

In France some mountain populations live only in woods of *P. sylvestris* and *P. uncinata*; Lescourret & Genard (1983) think they are true isolated populations with minor yearly fluctuations. According to Yeatman (1976) the Crossbill in France feeds on *Picea excelsa*. According to Schifferli *et al.* (1980), in Switzerland it also lives both on *P. excelsa* and mixed coniferous woods.

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## Extensions of range of some Bolivian birds

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Received 1 October 1986

This report documents range extensions of birds in Bolivia on a departmental basis and generally follows the format used by Remsen *et al.* (1985). The nomenclature used follows Remsen & Traylor (in press). Departamentos referred to in this paper are abbreviated throughout as follows: Beni (BE:), Chuquisaca (CH:), Cochabamba (CO:), Oruro (OR:), and Santa Cruz (SC:). Previously published records for Bolivian Departamentos are taken from Remsen & Traylor (in press). Names of provinces used here are taken from the Atlas Censal de Bolivia (1982).

These records are from observations and collections made in Bolivia during 1984 and one record during 1978 and '79. Site A was in Prov.

Sajama, Laguna, Puesto Militar de Lagunas at 4100 m; Site B was in Prov. Gral. Ballivan, Serrania Pilon, 27 km by road N Rio Quiquibey on road to San Borja, at 1025 m. All specimens are housed at Louisiana State University Museum of Zoology (LSUMZ). Capitalized colour names used to describe soft parts of specimens are from Smithe (1975, 1981). Other non-capitalized names of colours used are our own descriptions that were used when reasonably good colour matches could not be found from those in Smithe. Included in this report are the first specimen records for Bolivia for *Cathartes burrovianus* and the first Bolivian records of *Donacospiza albifrons*.

## LIST OF SPECIES

PUNA TINAMOU *Tinamotis pentlandii*

OR: Prov. Sajama, 43 km by road SW Curahurra de Sajama, 4025 m, 9 December 1984 (specimens: LSUMZ 123408-09, 125632). Sight records as follows: 28.9 km by road E Curahurra de Sajama, 3850 m, 2 on 2 Dec 1984 in a cleared field along an arroyo (a small canyon with only intermittent or no water) with shrub covered hillsides with approximately 30% bare ground; 10 km by road E Sajama, 4300 m, a flock of 9 on 9 Dec 1984 on a gently sloping hillside with scattered 3-4 m tall *Polylepis tomentella*, cushion plants (*Azorella* sp.) and scattered bunch grasses.

ANDEAN FLAMINGO *Phoenicoparrus andinus*

OR: 5-20 seen, at Site A in a small lake 5-8 Dec 1984.

ANDEAN GOOSE *Chloephaga melanoptera*

OR: Sight records:- Prov. Sajama, 19 km by road SW Curahurra de Sajama along Rio Pichaca valley, c. 3860 m, 7 on 2 Dec 1984 and 8 on 20 Dec 1984 in the matted growth of *Lysipomia*, *Distichia muscoides*, and *Verbena minima* which grows in the wet areas adjacent to Rio Pichaca and other similar areas in this vicinity; 6 km NE Laguna, foothills of Nevado Sajama, 4200 m, 3 grazing in matted vegetation near a small stream, 4 Dec 1984; Site A, 2 on 5 Dec and 1 on 6 Dec 1984.

RINGED TEAL *Callonetta leucophrys*

BE: Prov. Moxos, 38 km by road W Trinidad, 175 m, 2 on 18 Oct 1984 in a small impoundment of water near a road.

CINNAMON TEAL *Anas cyanoptera*

OR: At a small lake at Site A, one on 2 Dec, 2 on 5 Dec and 1 on 6 Dec, all 1984.

LESSER YELLOW-HEADED VULTURE *Cathartes burrovianus*

BE: Prov. Gral. Ballivan, 3 km SW San Borja, 450 m, 1 male, 7 Oct 1984 (specimen LSUMZ 123438); left testis 10 x 12 mm, right testis 7 x 10 mm, reddish in colour; light fat; wt. 1200 g; bill whitish horn; tarsi and knee joints Buff becoming darker toward toes; toes Blackish Neutral Gray; bottoms of feet Medium Neutral Gray, a whitish, chalky substance on and between scales; irides Brick Red; head, throat and chin Buff Yellow; cheeks, auricular area and lores Orange Yellow; forecrown Cream Color; crown and nape Cream Color with bluish grey mottling; bluish grey mottling on sides of throat and on the Orange Yellow portion of the head; skull 100% ossified; stomach and crop full of greyish foul-smelling, paste-like carrion; light moult on neck area. We found this species to be common throughout this general area of the Bolivian lowlands. Remsen & Ridgely (1980) and Schmitt *et al.* (in press) list sight records of this species for Bolivia; but this is the first specimen obtained there.

RED-THROATED CARACARA *Daptrius americanus*

BE: Prov. Gral. Ballivan, 50 km by road N Yacumo on road to Rurrenabaque, 575 m, 3 on 27 Sep 1984 and 1 on 28 Sep 1984.

GIANT COOT *Fulica gigantea*

OR: At Site A, 3 on 5 Dec, 1 on 6 Dec and 3 on 7 Dec, all 1984.

RED-LEGGED SERIEMA *Cariama cristata*

TA: Prov. Gran Chaco; 10 km SE Tiguipa, 555 m, 4 on 28 May 1979; CH: Prov. Luis Calvo; Camatindi, 3 on 11 May 1979. (See also Schmitt & Cole 1981).

GREATER YELLOWLEGS *Tringa melanoleuca*

OR: At Site A, one on 5 Dec 1984 (specimen LSUMZ 123468).

VIOLACEOUS QUAIL-DOVE *Geotrygon violacea*

BE: At Site B, 15 Sep 1984 (specimen LSUMZ 123494).

GOLDEN-COLLARED MACAW *Ara auricollis*

CH: Prov. Hernando Siles; c. 16 km by road E Monteagudo, a flock of 12 on 26 Apr 1984.

WHITE-COLLARED SWIFT *Streptoprocne zonaris*

CH: Prov. Yampareez; 4 km by road NE Tarabuco, 15-20 seen near a cliff, 27 Apr 1984.

SPARKLING VIOLETEAR *Colibri coruscans*

BE: At Site B, 23 and 24 Sep 1984 (specimens LSUMZ 123613-14).

GREEN-TAILED TRAINBEARER *Lesbia nuna*

CO: Prov. Carrasco; 6.6 km by road NW Lopez Mendoza, at km 98 from Cochabamba, Quebrado Majon, 3150 m. One male seen, 19 Aug 1984, feeding on flowering *Eucalyptus* sp. and a male and female on 20 Aug 1984.

GOULD'S JEWELFRONT *Polyplancta aurescens*

BE: At Site B, 14 and 22 Sep 1984 (specimens LSUMZ 123672-73). Recently recorded for Bolivia for the first time by Schuchman (1984).

LONG-BILLED STARThROAT *Heliomaster longirostris*

BE: Prov. Gral. Ballivan; 50 km by road N Yacumo on road to Rurrenabaque, 575 m, 24 and 28 Sep 1984 (specimens LSUMZ 123053, 123688).

BROAD-BILLED MOTMOT *Electron platyrhynchum*

BE: Prov. Gral. Ballivan; 50 km by road N Yacumo on road to Rurrenabaque, 575 m, 28 Sep 1984 (specimen LSUMZ 123700).

EMERALD TOUCANET *Aulacorhynchus prasinus*

BE: At Site B, 19 and 21 Sep 1984 (specimens LSUMZ 123728-30).

CHESTNUT-TIPPED TOUCANET *Aulacorhynchus derbianus*

BE: At Site B, 12 and 21 Sep 1984 (specimens LSUMZ 123731-32).

GOLDEN-GREEN WOODPECKER *Piculus chrysochloros*

BE: Prov. Cercado, 6 km by road SE Trinidad, 175 m, 27 Oct 1984 (specimen LSUMZ 125774).

OCELLATED WOODCREEPER *Xiphorhynchus ocellatus*

BE: At Site B, 13 specimens, 13-20 Sep 1984 (LSUMZ 123043, 123875-82, 125787-90).

SCALE-THROATED EARTH-CREEPER *Upucerthia dumetaria*

CH: Prov. Nor Cinti, 38 km by road S Padacoyo, 3275 m, 13 Nov 1984 (specimen LSUMZ 123077).

PLAIN SOFTTAIL *Thripophaga fusciceps*

BE: Prov. Cercado, 6 km by road SE Trinidad, 175 m, 26-30 Oct 1984 (specimens LSUMZ 124062-65).

STRIPED WOODHAUNTER *Hylocistis subulatus*

BE: At Site B, 22 Sep 1984 (specimen LSUMZ 124082). Recently recorded for the first time for Bolivia by Schulenberg & Remsen (1982).

GREY-THROATED LEAFSCRAPER *Sclerurus albigularis*

BE: At Site B, collected on 15, 20, and 22 Sep 1984 (LSUMZ 123044-45, 124095).

TAWNY-THROATED LEAFSCRAPER *Sclerurus mexicanus*

BE: At Site B, 13 and 14 Sep 1984 (specimens LSUMZ 124096-97).

HAIRY-CRESTED ANTBIRD *Rhegmatorhina melanosticta*

BE: At Site B, 13 and 18 Sep 1984 (specimens LSUMZ 124219-21).

BLACK-SPOTTED BARE-EYE *Phlegopsis nigromaculata*

SC: Prov. Ichilo; 7 km N, 17 km W Buena Vista, km 119 on the road to Yapacani, Propiedad Nuveo Mundo, 353 m, one netted, 26 Dec 1978 but not collected. This is the southernmost known locality of this Amazonian species (J. V. Remsen).

SHARP-TAILED TYRANT *Culicivora caudacuta*

BE: Prov. Gral. Ballivan, 3 km SW San Borja, 450 m, 6 Oct 1984 (specimen LSUMZ 124493). Only the second record for Bolivia (Remsen & Traylor, in press, per J. V. Remsen). Collected from a group of 3 perched on the inflorescences of 1-1.5 m tall grass in a shallow (0.5 m) depression (c. 5 x 10 m) in an open grassland area. Extremely wary and seen only once.

SUBTROPICAL DORADITO *Pseudocolopteryx acutipennis*

BE: Prov. Moxos, 38 km by road W Trinidad, 175 m, 19-21 Oct 1984 (specimens LSMUZ 124489-92, 125911).

SLATY-CAPPED FLYCATCHER *Leptopogon superciliaris*

BE: At Site B, 17 Sep 1984 (specimen LSMUZ 124657).

SPECTACLED BRISTLE-TYRANT *Phylloscartes orbitalis*

BE: At Site B, 12 and 22 Sep 1984 (specimens LSMUZ 124481-83).

BUFF-THROATED TODY-TYRANT *Hemitriccus rufigularis*

BE: At Site B, 20 Sep 1984 (specimen LSMUZ 124461).

WHITE-THROATED SPADEBILL *Platyrinchus mystaceus*

BE: Prov. Cercado, 6 km by road SE Trinidad, 175 m, 30 Oct 1984 (specimen LSMUZ 124441). The first record from the lowlands of Bolivia; it is not the ochraceous-bellied *P.m. partridgei*, the subspecies of the foothills of Bolivia, but a yellow-bellied individual, either an atypical *P.m. bifasciatus* or an undescribed subspecies (J. V. Remsen).

BLACK PHOEBE *Sayornis nigricans*

BE: At Site B, 1-3 daily, 11-23 Sep 1984.

BLACK-BELLIED SHRIKE-TYRANT *Agriornis montana*

OR: Prov. Sajama, 10 km by road E Sajama, 4300 m, 8 Dec 1984 (specimen LSMUZ 124280).

PUNA GROUND-TYRANT *Muscisaxicola juninensis*

OR: At Site A, 5 Dec 1984 (specimens LSMUZ 124286-88).

OCHRE-NAPED GROUND-TYRANT *Muscisaxicola flavinucha*

OR: Prov. Sajama, 10 km by road E Sajama, 4300 m, 8 Dec 1984 (specimen LSMUZ 124289).

BLUE-CROWNED MANAKIN *Pipra coronata*

BE: At Site B, 17 Sep 1984 (specimen LSMUZ 124270). Prov. Gral. Ballivan; 50 km by road N Yacumo on road to Rurrenabaque, 575 m, 30 Sep 1984 (specimen LSMUZ 124269).

BARN SWALLOW *Hirundo rustica*

OR: At Site A, 7 seen flying over small lake, 5 Dec 1984.

SLATY THRUSH *Turdus nigriceps*

BE: At Site B, 13 and 17 Sep 1984 (specimens LSMUZ 124745-46, 125964).

RED-BACKED SIERRA-FINCH *Phrygilus dorsalis*

CH: Prov. Nor Cinti, 38 km by road S Padcaya, 375 m, 13 Nov 1984. In addition to this specimen, 7 others were observed here in stands of 0.5-1 m high shrubs and columnar cacti.

LONG-TAILED REED-FINCH *Donacospiza albifrons*

BE: Prov. Gral. Ballivan, 3 km SW San Borja, 450 m, 8 Oct 1984 (specimens LSMUZ 124920-21); Prov. Moxos; 38 km by road W Trinidad, 175 m, 16-21 Oct 1984 (specimens LSMUZ 123069-70, 124922-26, 126016). Below are listed weights, colours of soft parts, reproductive conditions and stomach contents of the 10 specimens collected.

3 adult ♂♂ (skull 100% ossified): av. 18.9 g (18.1-19.6 g); irides Raw Umber; bill black to Blackish Neutral Gray; tarsi and toes Fuscous and Fawn Color; no fat; no body moult; left and right testis averaged 7.3 and 6 mm respectively; stomach contents contained insect parts.

3 immature ♂♂ (skulls ≤ 10% ossified): av. 17.1 g; irides Raw Umber; maxilla Fuscous to black; mandible Cream Color with Fuscous tomium, Light Neutral Gray and Pale Neutral Gray base with Fuscous tip; tarsi and toes Raw Umber, Fawn Color and Brownish Olive; no fat; none or light body moult; stomach contents contained insect parts and black beetles.

2 adult ♀♀: av. 16.15 g; irides Raw Umber; 1 specimen had a black bill, another had maxilla black with Light Neutral Gray mandible; tarsi and toes Fawn Color; no fat; no body moult; ovaries averaged 6 × 4 mm, one had ova and oviduct < 1 mm, the other had ova and oviduct of 2 mm; stomach contents contained insect parts and parts of seeds.

2 unsexed and age unknown (specimens preserved in alcohol): av. 17.5 g; irides Raw Umber; bill black; tarsi and toes Fawn Color and Glaucous 97.

The 2 specimens collected on 8 Oct were taken from a group of 6 sitting in 1 m tall shrub in a generally open grassland area with small islands of scrub and forest nearby. No other Long-tailed Reed-finches were seen in the San Borja area. Our sight records of this species at 38 km by road W Trinidad are as follows: 14 (in groups of 2-6) on 16 Oct, 6 on 17 Oct, 3 on 18 Oct, 6 on 19 Oct and 2 on 20 Oct, all 1984. 2-6 individuals were seen perching or feeding on

1-1.5 m tall shrubs in open grassland areas with islands of forest and small patches of forest nearby. Often seen perched upright and also sometimes hanging head down while searching among small leaved shrubs for food items. 2-6 individuals were seen feeding in the same shrub for 1-3 minutes and then moving on to another shrub to continue feeding. Easily approached when feeding and not well concealed in the tall shrubs in the open grassland. No singing was heard nor any indication of territorial behaviour detected. The gonad data from the adult specimens suggest that they were near breeding condition.

These specimens represent the first records of this species from Bolivia. Based on the distribution map of this species in Short (1975), these localities are at least 900 km northwest of previously known localities in Brazil and Paraguay.

CARMIOI'S TANAGER *Chlorothraupis carmioli*

BE: At Site B, 12-23 Sep 1984 (specimens LSUMZ 123049-50, 125298-304, 126131-32).

YELLOW-CRESTED TANAGER *Tachyphonus rufiventer*

BE: At Site B, 17 Sep 1984 (specimen LSUMZ 125315).

FAWN-BREASTED TANAGER *Pipraeidea melanonota*

BE: At Site B, 21 Sep 1984 (specimen LSUMZ 125377).

BAY-HEADED TANAGER *Tangara gyrola*

BE: At Site B, 23-24 Sep 1984 (specimens LSUMZ 125400-01).

SLATE-THROATED REDSTART *Myioborus miniatus*

BE: At Site B, 13 Sep 1984 (specimen LSUMZ 125433).

TWO-BANDED WARBLER *Basileuterus bivittata*

BE: At Site B, 19 Sep 1984 (specimen LSUMZ 125437).

SLATY-CAPPED SHRIKEVIREO *Vireolanius leucotis*

BE: At Site B, 19 Sep 1984 (specimen LSUMZ 125495).

TAWNY-CROWNED GREENLET *Hylophilus ochraceiceps*

BE: At Site B, 12-13 Sep 1984 (specimens LSUMZ 125496-97).

THICK-BILLED SISKIN *Carduelis crassirostris*

OR: Prov. Sajama, 10 km by road E Sajama, 4300 m, 8-9 Dec 1984 (specimens LSUMZ 123110, 125613-14, 126203-04). Sight records include flocks of up to 15 on 8 Dec 1984 and a group of 10 on 9 Dec 1984; seen perching in *Polylepis tomentella*, which in this particular area averaged 3-4 m in height. Our limited observations suggest that in this area *P. tomentella* is favoured for perching and for cover or both. Parker (1981) found that this species was characteristic of *Polylepis* woodlands in Peru.

*Acknowledgements:* We are grateful to Gaston Bejarano B. for his generous help in procurement of necessary permits and in many other ways during our stay in Bolivia. We also thank Jim and Andrea Solomon, Stan and Laurie Cobb, and Charles Williams for their hospitality and friendship during our tenure in La Paz, and Bruce and Helen Glick for their hospitality and friendship during our stay in Santa Cruz. J. C. Solomon provided identifications of species of plants used in this report. Our field work in Bolivia was supported in part by Louisiana State University Museum of Zoology, for which we are grateful. C. G. Schmitt also acknowledges the New Mexico Department of Game and Fish's permission for leave of absence during which this field work was conducted. J. V. Remsen kindly provided helpful suggestions and comments on this report.

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## Observations on the occurrence and behaviour of the Crimson Fruitcrow *Haematoderus militaris* in Central Amazonia

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Received 8 October 1986

As is the case with many of the species that inhabit the canopy of tropical forests, the biology of the Crimson Fruitcrow *Haematoderus militaris* is so poorly known that any observations of the species in the wild significantly increase our understanding of its ecology and distribution. Snow (1982) states that the species is "virtually unknown in life". In the course of 5 years of ornithological field work in the Agricultural Development District some 50-75 km north of Manaus, Amazonas, Brazil, we have made the following observations of Crimson Fruitcrows.

The area in which the bird has been observed is still for the most part virgin forest on nutrient-poor yellow latosols, typical of the terra firma forests accompanying the major river courses throughout the Amazon Basin. Average canopy height is c. 35 m with emergents upwards of 45 m. The canopy is fairly continuous and regular in surface contour (for further description of the forest, see *Suppl. Acta Amazonica* 12(3), 1982).

Most of our sightings of *H. militaris* have been made while conducting canopy surveys from a 42 m observation tower (Fig. 1) in the middle of virgin forest c. 50 km north of Manaus (see Bierregaard 1983). Additional observations were made from a 20 m high platform overlooking both virgin forest and deforested areas on the Fazenda Esteio, a cattle ranch being developed c. 65 km north of Manaus. Other observations have been made from the ground in the course of field work here and on 2 other nearby cattle ranches, Fazenda Dimona and Fazenda Porto Alegre.

Previously known only from the eastern Amazon Basin (Meyer de Schauensee 1970), the species seems to be fairly widely distributed throughout the Agricultural District as it has been reported in all the above